REMARKS

Claims 1-15 are pending in the present application.

A. Rejection under 35 U.S.C. §102(e)

Claim 6 has been rejected under 35 U.S.C. §102(e) as being anticipated by Stanich et al. (US-A-6,597,813). This rejection is respectfully traversed.

In formulating the rejection of claim 6, the Examiner alleges that Stanich et al. discloses, at column 3, lines 29-37, a screen wherein substantially all the threshold values corresponding to gray levels between g_{s1} and g_{s2} coincide with black positions in a constraining checkerboard pattern and substantially all the threshold values corresponding to gray levels between g_{s2} and g_{s3} coincide with white positions in the constraining checkerboard pattern. The Examiner further alleges that Stanich et al. discloses not placing pixels vertically or horizontally adjacent to each other until after a gray level threshold (col. 5, lines 30-36) and that utilizing the checkerboard pattern (col. 5, lines 16-19), this limits using a constrained checkerboard pattern until a gray level threshold is reached. From these allegations, the Examiner concludes that the teachings of Stanich et al. anticipate the presently claimed invention of independent claim 6. These allegations and conclusion are respectfully traversed.

Independent claim 6 recites a method of generating a halftone screen for converting an image received at d levels, for reproduction at c levels, where $d > c$, the method, in optional sequence, by generating a first initial stochastic screen pattern for a first gray level, the initial stochastic screen pattern being constrained by a checkerboard pattern such that a black pixel in the first initial checkerboard pattern constrained stochastic screen pattern is positioned in the first initial checkerboard pattern constrained stochastic screen pattern at a pixel position corresponding to a black pixel position in the checkerboard pattern.

The method of claim 6 also generates a plurality of subsequent first checkerboard pattern constrained stochastic screen patterns, each subsequent first checkerboard pattern constrained stochastic screen pattern corresponding to a specific gray level that is darker than the first gray level and is lighter than a second gray level, the second gray level being darker than the first gray level, each subsequent first checkerboard pattern constrained stochastic screen pattern maintaining an arrangement of black pixels of the first initial checkerboard pattern constrained stochastic screen pattern, each subsequent first checkerboard pattern constrained stochastic screen pattern including a number of additional black pixels such that a total number of black pixels in a subsequent first checkerboard pattern constrained stochastic screen pattern is greater than a number of black pixels in the initial checkerboard pattern constrained stochastic screen pattern, each additional black pixel in the subsequent first checkerboard pattern constrained stochastic screen patterns being positioned in the subsequent first checkerboard pattern constrained stochastic screen pattern at a pixel position corresponding to a black pixel position in the checkerboard pattern.

The method of claim 6 further generates a second checkerboard pattern constrained stochastic screen patterns, the second checkerboard pattern constrained stochastic screen pattern corresponding to the second gray level, the second checkerboard pattern constrained stochastic screen pattern maintaining the arrangement of black pixels of the first initial checkerboard pattern constrained stochastic screen pattern, the second checkerboard pattern constrained stochastic screen pattern including a number of additional black pixels such that a total number of black pixels in the second checkerboard pattern constrained stochastic screen pattern is greater than a number of black pixels in the initial checkerboard pattern constrained stochastic screen pattern, each additional black pixel in the second checkerboard pattern constrained stochastic screen patterns being positioned in the second checkerboard pattern constrained stochastic screen pattern at a pixel position corresponding to a black pixel position in the checkerboard pattern.

The method of claim 6 also generates a plurality of subsequent second checkerboard pattern constrained stochastic screen patterns, each subsequent second checkerboard pattern constrained stochastic screen pattern corresponding to a specific gray level that is darker than the second gray level and is lighter than a third gray level, the third gray level being darker than the second gray level, each subsequent second checkerboard pattern constrained stochastic screen pattern maintaining an arrangement of black pixels of the second checkerboard pattern constrained stochastic screen pattern, each subsequent first checkerboard pattern constrained stochastic screen pattern including a number of additional black pixels such that a total number of blacks in a subsequent second checkerboard pattern constrained stochastic screen pattern is greater than a number of black pixels in the second checkerboard pattern constrained stochastic screen pattern, each additional black pixel in the subsequent second checkerboard pattern constrained stochastic screen patterns being positioned in the subsequent second checkerboard pattern constrained stochastic screen patterns at a pixel position corresponding to a white pixel position in the checkerboard pattern.

With respect to the teachings of Stanich et al., the Examiner alleges that column 3, lines 29-37 of Stanich et al. teaches the constraining of a screen by a checkerboard pattern. Contrary to the Examiner's allegation, column 3, lines 29-37 of Stanich et al. teaches improving the screening techniques of US Patent Application 08/909,535 (now US Patent 6,025,930) and US Patent Application 08/943,881 (now US Patent 5,917,951) by clustering the black pixels in the screens of US Patent Application 08/909,535 (now US Patent 6,025,930) and US Patent Application 08/943,881 (now US Patent 5,917,951).

US Patent 6,025,930 teaches creating a screen pattern for various gray levels based upon a distance from the origin. Furthermore, US Patent 5,917,951 teaches creating an aperiodic mask for use with various gray levels. Both US Patent 6,025,930 and US Patent 5,917,951 fail to teach that each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) is positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern, and each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level

(g_{s3}) is positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern.

Furthermore, contrary to the Examiner's allegation, Stanich et al., at column 5, lines 25-36, fails to teach "not placing pixels vertically or horizontally adjacent to each other until after a gray level threshold" because Stanich et al., at column 5, lines 25-36, teaches that either the screen is not constrained with any pattern (no cluster) or the screen is constrained with an adjacent cluster criteria. The adjacent cluster criterion is defined as either two pixels being immediate vertical neighbors, immediate horizontal neighbors, or immediate diagonal neighbors. In all cases, the cluster criteria constrains the screen to place the next dot for the gray level in question at a position so that it is an immediate neighbor to an existing dot within the screen. This adjacency criterion does not teach or suggest the checkerboard constraining of a stochastic screen.

To address the Examiner's arguments in the Advisory Action, dated December 8, 2006, the Applicant has re-formatted Figures A-E to better explain the possible cluster criteria that Stanich et al. imposes on a screen.

Figure A

W	**W**	**T**	**W**	**W**	**W**	**W**	**W**	**W**
W	**W**	**W**	**W**	**T**	**T**	**W**	**T**	**W**
W	**T**	**W**	**W**	**W**	**W**	**W**	**W**	**T**
W	**W**	**T**	**T**	**W**	**W**	**T**	**W**	**W**
T	**T**	**T**	**W**	**T**	**T**	**W**	**T**	**W**
W	**W**	**T**	**T**	**T**	**T**	**T**	**W**	**T**
W	**W**	**T**	**W**	**T**	**W**	**W**	**T**	**W**
W	**T**	**W**	**W**	**W**	**T**	**W**	**T**	**W**
T	**W**	**W**	**T**	**T**	**W**	**W**	**W**	**T**

Figure A represents an exemplary stochastic screen having no cluster constraint wherein **T** represents a possible next black pixel location of the screen and **W** represents a non-possible next black pixel location of the screen wherein the next black pixel can be located in thirty-nine possible locations.

Figure B

W	W/CB	T	W/CB	W	W/CB	W	W/CB	W
W/CB	W	W/CB	W	T/CB	T	W/CB	T	W/CB
W	T/CB	W	W/CB	W	W/CB	W	W/CB	T
W/CB	W	T/CB	T	W/CB	W	T/CB	W	W/CB
T	T/CB	T	W/CB	T	T/CB	W	T/CB	W
W/CB	W	T/CB	T	T/CB	T	T/CB	W	T/CB
W	W/CB	T	W/CB	T	W/CB	W	T/CB	W
W/CB	T	W/CB	W	W/CB	T	W/CB	T	W/CB
T	W/CB	W	T/CB	T	W/CB	W	W/CB	T

Figure B represents the exemplary stochastic screen of Figure A having a checkerboard black constraint, as set forth in claim 6, wherein **T** represents a possible next black pixel location of the exemplary stochastic screen of Figure A, **W** represents a non-possible next black pixel location of the exemplary stochastic screen of Figure A, and CB represents a possible next black pixel location of a checkerboard black pixel screen when the gray level is between a first gray level and a second gray level. Cells with **T**/CB represent the possible next black pixel locations of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claim 6. Cells with **W**/CB represent a non-possible black pixel location of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claim 6.

As shown above, Figure F demonstrates that a checkerboard black constrained stochastic screen, according to independent claim 6, allows the next black pixel to be disbursed (non-clustered) and located in eleven possible locations.

Figure C

W/CW	W	T/CW	W	W/CW	W	W/CW	W	W/CW
W	W/CW	W	W/CW	T	T/CW	W	T/CW	W
W/CW	T	W/CW	W	W/CW	W	W/CW	W	T/CW
W	W/CW	T	T/CW	W	W/CW	T	W/CW	W
T/CW	T	T/CW	W	T/CW	T	W/CW	T	W/CW
W	W/CW	T	T/CW	T	T/CW	T	W/CW	T
W/CW	W	T/CW	W	T/CW	W	W/CW	T	W/CW
W	T/CW	W	W/CW	W	T/CW	W	T/CW	W
T/CW	W	W/CW	T	T/CW	W	W/CW	W	T/CW

Figure C represents the exemplary stochastic screen of Figure A having a checkerboard black constraint, as set forth in claim 6, wherein **T** represents a possible next black pixel location of the exemplary stochastic screen of Figure A, **W** represents a non-possible next black pixel location of the exemplary stochastic screen of Figure A, and CW represents a possible next black pixel location of a checkerboard white pixel screen when the grey level is between the second gray level and a third gray level. Cells with **T**/CW represent the possible next black pixel locations of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claim 6. Cells with **W**/CW represent a non-possible black pixel location of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claim 6.

As shown above, Figure C demonstrates that a checkerboard white constrained stochastic screen, according to independent claim 6, allows the next black pixel to be disbursed (non-clustered) and located in fifteen possible locations.

In contrast, Stanich et al. teaches, as recognized by the Examiner, a clustered pattern or non-clustered pattern. In other words, Stanich et al. teaches that if a cluster criterion is asserted, the next black pixel must be adjacent to the pixel in question (P_i).

Figure D illustrates an asserted cluster criterion wherein adjacent is defined as only immediate vertical neighbors to the currently designated black pixel location (P_i) or immediate horizontal neighbors to the currently designated black pixel location (P_i).

Figure D

W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	T	W	W	W	W
W	W	W	T	P_i	T	W	W	W
W	W	W	W	T	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W

In Figure D, **T** represents a possible next black pixel location with respect to the currently designated black pixel location (P_i) and **W** represents a non-possible next black pixel location with respect to the currently designated black pixel location (P_i), according to the teachings of Stanich et al. As shown above, Figure D demonstrates a cluster constraint, as taught by Stanich et al., which allows the next black pixel to be located in four possible locations.

Figure E illustrates an asserted cluster criterion wherein adjacent is defined as only immediate diagonal neighbors to the currently designated black pixel location (P_i).

Figure E

W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	T	W	T	W	W	W
W	W	W	W	P_i	W	W	W	W
W	W	W	T	W	T	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W

In Figure E, **T** represents a possible next black pixel location with respect to the currently designated black pixel location (P_i) and **W** represents a non-possible next black pixel location with respect to the currently designated black pixel location (P_i), according to the teachings of Stanich et al. As shown above, Figure E demonstrates a cluster constraint, as taught by Stanich et al., which allows the next black pixel to be located in four possible locations.

As set forth above, the presently claimed invention sets forth a checkerboard constraint upon a stochastic screen. To demonstrate the effects of a checkerboard constraint upon a stochastic screen, Figures B and C have been provided above wherein Figure B represents a black pixel checkerboard constraint placed upon the exemplary stochastic screen of Figure A and Figure C represents a white pixel checkerboard constraint placed upon the exemplary stochastic screen of Figure A. It is noted from these examples (Figures B and C) that the stochastic checkerboard constrained screens disburse the dots, not cluster the dots as taught by Stanich et al.

Therefore, Stanich et al. fails to disclose or suggest that when the gray level is between a first gray level and a second gray level, each subsequent first checkerboard pattern constrained stochastic screen pattern includes a number of additional black pixels such that a total number of black pixels in a subsequent first checkerboard pattern constrained stochastic screen pattern is greater than a number of black pixels in the initial checkerboard pattern constrained stochastic screen pattern, each additional black pixel in the subsequent first checkerboard pattern constrained stochastic screen patterns being positioned in the subsequent first checkerboard pattern constrained stochastic screen pattern at a pixel position corresponding to a black pixel position in the checkerboard pattern set forth by independent claim 6.

Also, Stanich et al. fails to disclose or suggest that when the gray level is between a second gray level and a third gray level, each subsequent first checkerboard pattern constrained stochastic screen pattern includes a number of additional black pixels such that a total number of blacks in a subsequent second checkerboard pattern constrained stochastic screen pattern is greater than a number of black pixels in the second checkerboard pattern constrained stochastic screen pattern, each additional black pixel in the subsequent second checkerboard pattern constrained stochastic screen patterns being positioned in the subsequent second checkerboard pattern constrained stochastic screen patterns at a pixel position corresponding to a white pixel position in the checkerboard pattern, as set forth by independent claim 6.

Therefore Stanich et al. fails to anticipate the checkerboard pattern constrained stochastic screen patterns, as set forth by independent claim 6.

Accordingly, in view of the remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw the rejection under 35 U.S.C. §102.

B. Rejection under 35 U.S.C. §103

Claims 1-5 and 7-15 have been rejected under 35 U.S.C. §103 as being unpatentable over Stanich et al. (US-A-6,597,813) in view of Chen et al. (US-A-4,668,995). This rejection is respectfully traversed.

In formulating the rejection of claims 1-5 and 7-15, the Examiner alleges that Stanich et al. discloses, at column 3, lines 29-37, a screen wherein substantially all the threshold values corresponding to gray levels between g_{s1} and g_{s2} coincide with black positions in a constraining checkerboard pattern and substantially all the threshold values corresponding to gray levels between g_{s2} and g_{s3} coincide with white positions in the constraining checkerboard pattern. The Examiner further alleges that Stanich et al. discloses not placing pixels vertically or horizontally adjacent to each other until after a gray level threshold (col. 5, lines 30-36) and that utilizing the checkerboard pattern (col. 5, lines 16-19), this limits using a constrained checkerboard pattern until a gray level threshold is reached.

Moreover, the Examiner recognizes that Stanich et al. fails to disclose $g_{s1} \geq g_{s2} \geq g_{s3}$ and wherein the gray level g_{s3} corresponds to a black dither of 50% or less for gray levels $0 < g_s < 2^m$, wherein $g_s = 0$ corresponds to 100% black and $g_s = 2^m$ corresponds to 0% black. To meet this deficiency in the teachings of Stanich et al., the Examiner proposes to modify the teachings of Stanich et al. with the teachings of Chen et al. The Examiner alleges that Chen et al. teaches $g_{s1} \geq g_{s2} \geq g_{s3}$ and wherein the gray level g_{s3} corresponds to a black dither of 50% or less for gray levels $0 < g_s < 2^m$, wherein $g_s = 0$ corresponds to 100% black and $g_s = 2^m$ corresponds to 0% black.

From these allegations the Examiner concludes that an ordinary skilled artisan would find the presently claim invention obvious in view of the teachings of Stanich et al. and Chen et al. These allegations and conclusion, in view of the amendments set forth above, are respectfully traversed.

Independent claim 1 recites a halftone processor for converting a gray scale image comprising a plurality of m-bit pixels to a halftoned image comprising a plurality of

n-bit pixel images, where m > n, wherein the processor includes a memory storing a stochastic screen, the stochastic mask being a stochastic screen constrained by a checkerboard pattern, the checkerboard pattern constrained stochastic screen comprising a set of threshold values, each threshold value in the checkerboard pattern constrained stochastic screen corresponding to a gray level, each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) being positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern, each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level (g_{s3}) being positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern, the first gray level (g_{s1}) being greater than the second gray level (g_{s2}), the second gray level (g_{s2}) being greater than the third gray level (g_{s3}), the third gray level (g_{s3}) corresponding to a black dither of 50% or less for gray levels (g_s) wherein $x < g_s < y$, x corresponding to 100% black, y corresponding to 0% black; and a comparator receiving the gray scale image and the set of threshold values corresponding to the checkerboard pattern constrained stochastic screen, the comparator comparing, on a pixel-by-pixel basis, a value of each pixel in the gray scale image to a corresponding threshold value in the checkerboard pattern constrained stochastic screen to produce the halftoned image.

Independent claim 9 recites a method for converting a gray scale image received at d levels, for reproduction at c levels, where d > c, the method, in optional sequence, by receiving the gray scale image including a plurality of pixels and comparing, on a pixel-by-pixel basis, a value of each of the pixels in the gray scale image to a corresponding threshold value in a stochastic screen, the stochastic screen being constrained by a checkerboard pattern, the checkerboard pattern constrained stochastic screen comprising a set of threshold values, each threshold value in the checkerboard pattern constrained stochastic screen corresponding to a gray level, each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) being positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern,

each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level (g_{s3}) being positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern, the first gray level (g_{s1}) being greater than the second gray level (g_{s2}), the second gray level (g_{s2}) being greater than the third gray level (g_{s3}, the third gray level (g_{s3}) corresponding to a black dither of 50% or less for gray levels (g_s) wherein $x < g_s < y$, x corresponding to 100% black, y corresponding to 0% black.

With respect to the teachings of Stanich et al., the Examiner alleges that column 3, lines 29-37 of Stanich et al. teaches the constraining of a screen by a checkerboard pattern. Contrary to the Examiner's allegation, column 3, lines 29-37 of Stanich et al. teaches improving the screening techniques of US Patent Application 08/909,535 (now US Patent 6,025,930) and US Patent Application 08/943,881 (now US Patent 5,917,951) by clustering the black pixels in the screens of US Patent Application 08/909,535 (now US Patent 6,025,930) and US Patent Application 08/943,881 (now US Patent 5,917,951).

US Patent 6,025,930 teaches creating a screen pattern for various gray levels based upon a distance from the origin. Furthermore, US Patent 5,917,951 teaches creating an aperiodic mask for use with various gray levels. Both US Patent 6,025,930 and US Patent 5,917,951 fail to teach that each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) is positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern, and each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level (g_{s3}) is positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern.

Furthermore, contrary to the Examiner's allegation, Stanich et al., at column 5, lines 25-36, fails to teach "not placing pixels vertically or horizontally adjacent to each other until after a gray level threshold" because Stanich et al., at column 5, lines 25-36, teaches that either the screen is not constrained with any pattern (no cluster) or the screen is constrained with an adjacent cluster criteria. The adjacent cluster criterion is defined as either two pixels being immediate vertical neighbors, immediate horizontal

neighbors, or immediate diagonal neighbors. In all cases, the cluster criteria constrains the screen to place the next dot for the gray level in question at a position so that it is an immediate neighbor to an existing dot within the screen. This adjacency criterion does not teach or suggest the checkerboard constraining of a stochastic screen.

To address the Examiner's arguments in the Advisory Action, dated December 8, 2006, the Applicant has re-formatted Figures A-E to better explain the possible cluster criteria that Stanich et al. imposes on a screen.

Figure A

W	W	T	W	W	W	W	W	W
W	W	W	W	T	T	W	T	W
W	T	W	W	W	W	W	W	T
W	W	T	T	W	W	T	W	W
T	T	T	W	T	T	W	T	W
W	W	T	T	T	T	T	W	T
W	W	T	W	T	W	W	T	W
W	T	W	W	W	T	W	T	W
T	W	W	T	T	W	W	W	T

Figure A represents an exemplary stochastic screen having no cluster constraint wherein **T** represents a possible next black pixel location of the screen and **W** represents a non-possible next black pixel location of the screen wherein the next black pixel can be located in thirty-nine possible locations.

Figure B

W	W/CB	T	W/CB	W	W/CB	W	W/CB	W
W/CB	W	W/CB	W	T/CB	T	W/CB	T	W/CB
W	T/CB	W	W/CB	W	W/CB	W	W/CB	T
W/CB	W	T/CB	T	W/CB	W	T/CB	W	W/CB
T	T/CB	T	W/CB	T	T/CB	W	T/CB	W
W/CB	W	T/CB	T	T/CB	T	T/CB	W	T/CB
W	W/CB	T	W/CB	T	W/CB	W	T/CB	W
W/CB	T	W/CB	W	W/CB	T	W/CB	T	W/CB
T	W/CB	W	T/CB	T	W/CB	W	W/CB	T

Figure B represents the exemplary stochastic screen of Figure A having a checkerboard black constraint, as set forth in claims 1 and 9, wherein T represents a possible next black pixel location of the exemplary stochastic screen of Figure A, **W** represents a non-possible next black pixel location of the exemplary stochastic screen of Figure A, and CB represents a possible next black pixel location of a checkerboard black pixel screen when the gray level is between a first gray level and a second gray level. Cells with T/CB represent the possible next black pixel locations of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claims 1 and 9. Cells with **W**/CB represent a non-possible black pixel location of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claims 1 and 9.

As shown above, Figure F demonstrates that a checkerboard black constrained stochastic screen, according to independent claims 1 and 9, allows the next black pixel to be disbursed (non-clustered) and located in eleven possible locations.

Figure C

W/CW	W	T/CW	W	W/CW	W	W/CW	W	W/CW
W	W/CW	W	W/CW	T	T/CW	W	T/CW	W
W/CW	T	W/CW	W	W/CW	W	W/CW	W	T/CW
W	W/CW	T	T/CW	W	W/CW	T	W/CW	W
T/CW	T	T/CW	W	T/CW	T	W/CW	T	W/CW
W	W/CW	T	T/CW	T	T/CW	T	W/CW	T
W/CW	W	T/CW	W	T/CW	W	W/CW	T	W/CW
W	T/CW	W	W/CW	W	T/CW	W	T/CW	W
T/CW	W	W/CW	T	T/CW	W	W/CW	W	T/CW

Figure C represents the exemplary stochastic screen of Figure A having a checkerboard black constraint, as set forth in claims 1 and 9, wherein T represents a possible next black pixel location of the exemplary stochastic screen of Figure A, **W** represents a non-possible next black pixel location of the exemplary stochastic screen of Figure A, and CW represents a possible next black pixel location of a checkerboard white pixel screen when the grey level is between the second gray level and a third gray level. Cells with T/CW represent the possible next black pixel locations of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claims 1 and 9. Cells with **W**/CW represent a non-possible black pixel location of the exemplary stochastic screen as constrained by the checkerboard black pixel screen, according to independent claims 1 and 9.

As shown above, Figure C demonstrates that a checkerboard white constrained stochastic screen, according to independent claims 1 and 9, allows the next black pixel to be disbursed (non-clustered) and located in fifteen possible locations.

In contrast, Stanich et al. teaches, as recognized by the Examiner, a clustered pattern or non-clustered pattern. In other words, Stanich et al. teaches that if a cluster criterion is asserted, the next black pixel must be adjacent to the pixel in question (P_i).

Figure D illustrates an asserted cluster criterion wherein adjacent is defined as only immediate vertical neighbors to the currently designated black pixel location (P_i) or immediate horizontal neighbors to the currently designated black pixel location (P_i).

Figure D

W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	T	W	W	W	W
W	W	W	T	P_i	T	W	W	W
W	W	W	W	T	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W

In Figure D, **T** represents a possible next black pixel location with respect to the currently designated black pixel location (P_i) and **W** represents a non-possible next black pixel location with respect to the currently designated black pixel location (P_i), according to the teachings of Stanich et al. As shown above, Figure D demonstrates a cluster constraint, as taught by Stanich et al., which allows the next black pixel to be located in four possible locations.

Figure E illustrates an asserted cluster criterion wherein adjacent is defined as only immediate diagonal neighbors to the currently designated black pixel location (P_i).

Figure E

W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	T	W	T	W	W	W
W	W	W	W	P_i	W	W	W	W
W	W	W	T	W	T	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W
W	W	W	W	W	W	W	W	W

In Figure E, **T** represents a possible next black pixel location with respect to the currently designated black pixel location (P_i) and **W** represents a non-possible next black pixel location with respect to the currently designated black pixel location (P_i), according to the teachings of Stanich et al. As shown above, Figure E demonstrates a cluster constraint, as taught by Stanich et al., which allows the next black pixel to be located in four possible locations.

As set forth above, the presently claimed invention sets forth a checkerboard constraint upon a stochastic screen. To demonstrate the effects of a checkerboard constraint upon a stochastic screen, Figures B and C have been provided above wherein Figure B represents a black pixel checkerboard constraint placed upon the exemplary stochastic screen of Figure A and Figure C represents a white pixel checkerboard constraint placed upon the exemplary stochastic screen of Figure A. It is noted from these examples (Figures B and C) that the stochastic checkerboard constrained screens disburse the dots, not cluster the dots as taught by Stanich et al.

Therefore, Stanich et al. fails to disclose or suggest that each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) is positioned in the **checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern**, and each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level (g_{s3}) is positioned in **the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern**, as set forth by independent claims 1 and 9.

With respect to Chen et al., Chen et al. fails to disclose or suggest that each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) is positioned in the **checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern**, and each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level (g_{s3}) is positioned in **the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern**, as set forth by independent claims 1 and 9.

Therefore, since both Stanich et al. and Chen et al., singly, fail to disclose or suggest each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) is positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern, and each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level (g_{s3}) is positioned in the checkerboard

pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern, the combination of Stanich et al. and Chen et al. fails to disclose or suggest each threshold value corresponding to a gray level between a first gray level (g_{s1}) and a second gray level (g_{s2}) is positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a black pixel position in the checkerboard pattern, and each threshold value corresponding to a gray level between the second gray level (g_{s2}) and a third gray level (g_{s3}) is positioned in the checkerboard pattern constrained stochastic screen at a pixel position corresponding to a white pixel position in the checkerboard pattern, as set forth by independent claims 1 and 9.

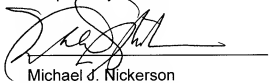
With respect to dependent claims 2-5, 7, 8, and 10-15, the Applicant, for the sake of brevity, will not address the reasons supporting patentability for these individual dependent claims, as these claims depend directly or indirectly from allowable independent claims 1 and 9. The Applicant reserves the right to address the patentability of these dependent claims at a later time, should it be necessary.

Accordingly, in view of the remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw the rejection under 35 U.S.C. §103.

CONCLUSION

Accordingly, in view of the reasons set forth above, the Examiner is respectfully requested to reconsider and withdraw all the present rejections. Also, an early indication of allowability is earnestly solicited.

Respectfully submitted,



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